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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/650,940 | 08/27/2003 | Jae-Woo Roh | DE-1502 | 8090 |
| 7590 | 08/17/2004 | | EXAMINER | |
| David A. Einhom, Esq. Anderson Kill & Olick, P.C. 1251 Avenue of the Americas New York, NY 10020 | | | CHANG, AUDREY Y | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2872 | |

DATE MAILED: 08/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|--------------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. 10/650,940 | Applicant(s) ROH, JAE-WOO | |
| | Examiner Audrey Y. Chang | Art Unit 2872 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some * c) ☐ None of:
 - 1. ☒ Certified copies of the priority documents have been received.
 - 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| <ul style="list-style-type: none"> 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____. | <ul style="list-style-type: none"> 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____. 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6) <input type="checkbox"/> Other: _____. |
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DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “second actuator for altering a position of the first reflection mirror” recited in **claim 6** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. **Claims 1-6 are objected to because of the following informalities:**

(1). The phrase “a lens for *deflecting* the reduced reference beam” recited in claim 1 is not clear. A lens as known in the art “**refracts**” light beam. The phrase “refraction” is a more art-recognized term than “deflection” concerning the function of the lens.

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(2). The phrase “the proceeding direction of the reduced reference beam toward the first reflection mirror is perpendicular” recited in claim 5 is confusing and indefinite since it is not clear the “perpendicular” is measured with respect to what. It is implicitly true the proceeding direction CANNOT be perpendicular with respect to the first mirror as shown in Figure 3 of the instant application.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Tanaka et al (PN. 6,256,281) in view of the applicant admitted prior art.**

Tanaka et al teaches a *volume holographic memory system for digital data storage* (Figure 1), wherein the system comprises a *laser light source* (1), a *translucent mirror* (3), serves as the *beam splitter* for separating the laser light beam into a *signal beam* (4) and a *reference beam* (5), and a *spatial light modulator* (8) controlled by a *controller* (30) for modulating the signal light beam to provide *digital data* to be recorded that includes *binary coding on a page by page basis* to be imparted on the signal beam (please see column 7 lines 52-64). The system further comprises a *second spatial light modulator* (52'), serves as the *beam selecting means*, that is placed in the optical path of the reference beam wherein the second spatial light modulator comprises *optically transparent portions* and *opaque portions*, (Figure 2), which *partially* blocks the reference beam to transmit a *selected portion* of the reference beam. The transmitted reference beam is therefore a *reduced reference beam*. The reduced reference beam is then propagated to a reflecting mirror (12) and to be directed to a *recording medium*, (10, Figure 10, columns 6-9).

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This reference has met all the limitations of the claim with the exception that it does not teach explicitly that a *lens* is used to deflect the reduced reference beam to the recording or storage medium. However as demonstrated in Figure 1 that the reference light beam is *focused* toward the storage medium (please see Figure 1), and it is known that a mirror in general does NOT have focusing power, this means a lens must be included to carry out the focusing function. **Applicant admitted prior art** (Figure 1 of the instant application) also teaches to use a lens (106) to focus the light toward the medium, such modification, if not already included in the system of Tanaka et al would therefore have been obvious to one skilled in the art for the purpose of focusing the reference light beam to the desired recording location on the medium.

5. **Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Tanaka et al and applicant admitted prior art as applied to claim 1 above, and further in view of the patent issued to Davis (PN. 6,486,982).**

The volume holographic memory system for digital data recording taught by Tanaka et al in combination of the teachings of **applicant admitted prior art** have met all the limitations of the claims. Tanaka et al teaches that the second spatial light modulator serves as the beam selection means may be made of transparent glass plate coated with black paint to provide the optically transparent and optically opaque portions, (please see column 8, lines 42-49). Tanaka et al also teaches that this beam selection means may be provided by using a *liquid crystal shutter panel* such that the extend of the reference beam or beam shape may be *electrically controlled*, (column 8, lines 51-65). It is implicitly true that the LCD shutter may be switched between ON (transparent) and OFF (opaque) state to allow transmission or blockage of the light beam. This beam selecting means, either of black paint coated glass plate or LCD shutter panel, serves as the *iris* wherein transmission regions may be changed, (either manually or electrically). However this reference does not teach *explicitly* to use an *actuator* for changing the position

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of the transmission region of the iris. **Davis** in the same field of endeavor teaches to use a *limiting aperture* (208, Figures 2 and 7), in either path of the reference light beam or signal light beam in a holographic data recording system, to shape the beam, wherein the limiting aperture has different transparent and opaque regions and a *motor* is used to move the limiting aperture to change the positions of the transparent regions, (please see column 10). It would then have been obvious to one skilled in the art to apply the teachings of Davis to use motor as actuator to move and select the desired transmitting regions of the beam selecting means for the benefit of providing a mechanical means with mechanical control to adjust and control the beam shape.

With regard to claims 3-6, Tanaka et al teaches to use a reflecting mirror (12) with a reference beam control driver (33) as an actuator (33) to move the reflecting mirror (12, Figure 1), this mirror serves as the second mirror. However this reference does not teach explicitly to use an additional reflecting mirror, (as the first mirror). However using reflecting mirror as means to redirect light beam is a common practice in the art. **Applicant admitted prior art** (Figure 1 of the instant application) teaches an arrangement of using a first and second reflecting mirror (103 and 104) with an actuator (105) to control the position of the second mirror (104) to direct the reference beam toward the lens (106). It would then have been obvious to one skilled in the art to apply the teachings of the *admitted prior art* as an alternative arrangement for the hologram memory system for the benefit of have more direction control of the reference beam. It is implicitly true that the movement of the iris, i.e. movement of the transparent regions of the beam selecting means, is on a two dimensional plane, either by the manual means, electrical means of Tanaka et al or the mechanical means of Davis. It is an obvious modification to one skilled in the art to make the incident direction of the reference beam on the lens to be the same for the benefit of maintaining the incident direction of the reference beam on the recording medium as shown by admitted prior art. With regard to claim 6, although these references do not teach explicitly to have an

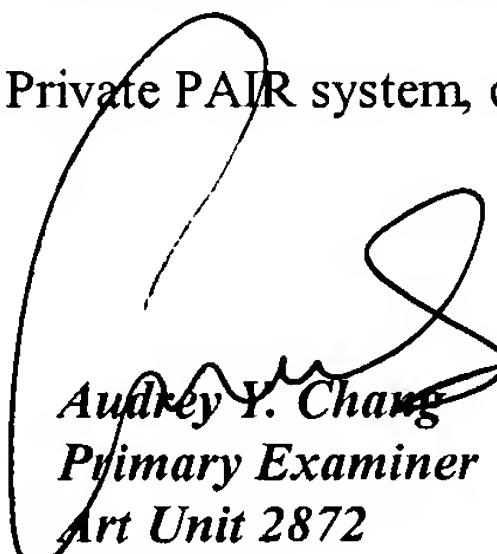
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actuator to control the position of the first mirror, such modifications would have been obvious to one skilled in the art for the benefit of adding additional control to the direction of the reference beam.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Audrey Y. Chang
Primary Examiner
Art Unit 2872

A. Chang, Ph.D.